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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,254	12/23/2003	Toshitaka Yamada	008312-0307436	4461
909	7590	12/13/2005	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP			AL NAZER, LEITH A	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2821	

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/743,254

Applicant(s)

YAMADA ET AL.

Examiner

Leith A. Al-Nazer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/23/03, 06/13/05
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 2, 3, 11, and 17 are objected to because of the following informalities:

Claims 2 and 3 recite "at least one first electrode other than the first electrode is provided". This phrase should be reworded to increase clarity. For example, the word "additional" could be added after the word "one" in order to more clearly distinguish the electrodes.

Claim 11 recites "at least one second electrode other than the second electrode is provided". This phrase should be reworded to increase clarity. For example, the word "additional" could be added after the word "one" in order to more clearly distinguish the electrodes.

Claim 17 recites "at least one positive electrode other than the positive electrode is provided". This phrase should be reworded to increase clarity. For example, the word "additional" could be added after the word "one" in order to more clearly distinguish the electrodes.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 19, and 20 recite the terms “a slab waveguide structure” and “a gain waveguide structure”. These terms are vague and indefinite, as it is unclear what structural elements or layers each of the terms is referring to.

Claims 8 and 9 recite “wherein the inclination of the first electrode is an angle in which a refractive index profile along the direction in which the gain waveguide structure is extended is averaged over the entire optical path length of the oscillation optical axis of the laser beam”. This wording is generally vague and indefinite, and as a result, Examiner is unsure what structure Applicant is attempting to claim.

Claims 10 and 15 are generally vague, indefinite, and extremely confusing. The claims appear to be a direct translation from a foreign document. As a result, Examiner is unsure of the structure Applicant is attempting to claim. For example, it is unclear how the various elements, such as the active layer, the first and second electrodes, the first and second semiconductor layers, and the first and second mirrors, are placed relative to one another. The claim makes numerous references to various “ends” and “side surfaces”. However, Examiner is unsure of the location of these “ends” and “side surfaces” relative to the elements and layers listed previously.

Claim 12 recites “wherein the angle provided to the second electrode is an angle in which a refractive index profile along the direction in which the active layer is extended can be averaged over the entire area of an optical path on which the light is

outputted". This wording is generally vague and indefinite, and as a result, Examiner is unsure what structure Applicant is attempting to claim.

Claim 18 recites "wherein the positive electrode is formed so as to have an angle in which a refractive index profile along the direction in which the active layer is extended can be averaged over the entire area of an optical path on which the light is outputted". This wording is generally vague and indefinite, and as a result, Examiner is unsure what structure Applicant is attempting to claim.

Claims 19 and 20 recite the phrase "a laminating direction". This term is vague and indefinite, as it is unclear what direction is being referred to.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 8-12, and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Document No. 01-207985 to Ikeda.

With respect to claims 1-3, 8, and 9, Ikeda teaches a semiconductor laser apparatus which has a slab waveguide structure extended in one direction, and in which a gain waveguide structure is formed in a direction vertical to the one direction, and in which a first electrode (11) stipulating the gain waveguide along an oscillation optical axis of an optical resonator and a plane-shaped second electrode (22) are disposed so

as to face one another, wherein the first electrode is formed so as to have a predetermined angle with respect to the oscillation optical axis (figures 1 and 2).

With respect to claims 10-12, Ikeda teaches a semiconductor laser apparatus comprising: a first semiconductor layer (21) which is a plate-shaped p-type semiconductor, and in which a first electrode (22) is formed on an entire surface at one side; a first mirror (25) which is provided at one end in a direction in which a surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended; a second mirror (26) which is provided at one end in the direction in which the surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended and so as to be parallel to the first mirror; a second semiconductor layer (13) which is a plate-shaped n-type semiconductor, and which is extended, at one side surface so as to be a predetermined shape, to at least one side of the direction in which the one side surface is extended, and on which a second electrode (11 and 24 in figures 1 and 2) which is able to face the first electrode is formed, the second electrode being formed so as to have a predetermined angle with respect to a straight line defined due to the first mirror and the second mirror facing one another; and an active layer (figure 2) positioned between a plane facing the plane on which the first electrode of the first semiconductor layer is formed and a plane facing the plane on which the second electrode of the second semiconductor layer is formed, the active layer outputting light in a direction perpendicular to the plane direction of the first and second semiconductor layers and in a direction parallel to the straight line defined by the first mirror and the second mirror

due to a predetermined amount of electric current being supplied to the second electrode (figures 1 and 2).

With respect to claim 15, Ikeda teaches a semiconductor laser apparatus comprising: a first semiconductor layer (21) which functions as one cladding layer of an array waveguide, and in which a negative electrode (22) is formed on an entire surface of one side; a first mirror (25) which is provided at one end in a direction to which a surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended; a second mirror (26) which is provided at one end in the direction in which the surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended and so as to be parallel to the first mirror; a second semiconductor layer (13) which functions as a second cladding layer facing the first semiconductor layer of the array waveguide, and which is extended, at a surface opposite to the surface facing the first semiconductor layer so as to be a predetermined shape, to at least one side of the direction in which the one side surface is extended, and on which a positive electrode (11 and 24 in figures 1 and 2) which is able to face the negative electrode is formed, the positive electrode being non-parallel to a straight line defined due to the first mirror and the second mirror facing one another; and an active layer (figure 2) positioned between a plane facing the plane on which the first electrode of the first semiconductor layer is formed and a plane facing the plane on which the second electrode of the second semiconductor layer is formed, the active layer outputting light in a direction perpendicular to the plane direction of the first and second semiconductor layers and in

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a direction parallel to the straight line defined by the first mirror and the second mirror due to a predetermined amount of electric current being supplied to the second electrode (figures 1 and 2).

With respect to claims 16-18, Ikeda teaches the positive electrode being a stripe shape (figures 1 and 2).

With respect to claims 19 and 20, Ikeda teaches a semiconductor laser apparatus in which a plurality of cladding layers (figure 2) are laminated; a first electrode (11 and 24) having a predetermined width and a second electrode (22) whose width is greater than the width of the first electrode being disposed so as to face one another via the respective cladding layers (figures 1 and 2); a laminating direction of the respective cladding layers at cementing portions of the respective cladding layers being made to be a slab waveguide structure (figures 1 and 2); and a direction vertical to the laminating direction being made to be a gain waveguide structure (figures 1 and 2), and which oscillates a laser beam in these waveguide structures, wherein the first electrode (11 and 24) is formed so as to be inclined with respect to an oscillation optical axis of the laser beam (figures 1 and 2).

6. Claims 1-3, 8-12, and 15-20 are rejected under 35 U.S.C. 102(b) as being anticipated by non-patent literature to Alphonse et al.

With respect to claims 1-3, 8, and 9, Alphonse teaches a semiconductor laser apparatus which has a slab waveguide structure extended in one direction (figure 2), and in which a gain waveguide structure is formed in a direction vertical to the one

direction (figure 2), and in which a first electrode stipulating the gain waveguide along an oscillation optical axis of an optical resonator and a plane-shaped second electrode are disposed so as to face one another, wherein the first electrode is formed so as to have a predetermined angle with respect to the oscillation optical axis (figure 2).

With respect to claims 10-12, Alphonse teaches a semiconductor laser apparatus comprising: a first semiconductor layer which is a plate-shaped p-type semiconductor, and in which a first electrode is formed on an entire surface at one side (figure 2); a first mirror which is provided at one end in a direction in which a surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended (figure 2); a second mirror which is provided at one end in the direction in which the surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended and so as to be parallel to the first mirror (figure 2); a second semiconductor layer which is a plate-shaped n-type semiconductor, and which is extended, at one side surface so as to be a predetermined shape, to at least one side of the direction in which the one side surface is extended, and on which a second electrode which is able to face the first electrode is formed, the second electrode being formed so as to have a predetermined angle with respect to a straight line defined due to the first mirror and the second mirror facing one another (figure 2); and an active layer positioned between a plane facing the plane on which the first electrode of the first semiconductor layer is formed and a plane facing the plane on which the second electrode of the second semiconductor layer is formed, the active layer outputting light in a direction perpendicular to the plane direction of the first

and second semiconductor layers and in a direction parallel to the straight line defined by the first mirror and the second mirror due to a predetermined amount of electric current being supplied to the second electrode (figure 2).

With respect to claim 15, Alphonse teaches a semiconductor laser apparatus comprising: a first semiconductor layer which functions as one cladding layer of an array waveguide, and in which a negative electrode is formed on an entire surface of one side (figure 2); a first mirror which is provided at one end in a direction to which a surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended (figure 2); a second mirror which is provided at one end in the direction in which the surface of the first semiconductor layer is extended, in a direction perpendicular to the direction in which the surface is extended and so as to be parallel to the first mirror (figure 2); a second semiconductor layer which functions as a second cladding layer facing the first semiconductor layer of the array waveguide, and which is extended, at a surface opposite to the surface facing the first semiconductor layer so as to be a predetermined shape, to at least one side of the direction in which the one side surface is extended, and on which a positive electrode which is able to face the negative electrode is formed, the positive electrode being non-parallel to a straight line defined due to the first mirror and the second mirror facing one another (figure 2); and an active layer positioned between a plane facing the plane on which the first electrode of the first semiconductor layer is formed and a plane facing the plane on which the second electrode of the second semiconductor layer is formed, the active layer outputting light in a direction perpendicular to the plane direction of the first and

second semiconductor layers and in a direction parallel to the straight line defined by the first mirror and the second mirror due to a predetermined amount of electric current being supplied to the second electrode (figure 2).

With respect to claims 16-18, Alphonse teaches the positive electrode being a stripe shape (figure 2).

With respect to claims 19 and 20, Alphonse teaches a semiconductor laser apparatus in which a plurality of cladding layers are laminated (figure 2); a first electrode having a predetermined width and a second electrode whose width is greater than the width of the first electrode being disposed so as to face one another via the respective cladding layers (figure 2); a laminating direction of the respective cladding layers at cementing portions of the respective cladding layers being made to be a slab waveguide structure (figure 2); and a direction vertical to the laminating direction being made to be a gain waveguide structure, and which oscillates a laser beam in these waveguide structures, wherein the first electrode is formed so as to be inclined with respect to an oscillation optical axis of the laser beam (figure 2).

Allowable Subject Matter

7. Claims 4-7, 13, and 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Citation of Pertinent References

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following documents further show the state of the art with respect to electrode configurations in semiconductor lasers:

- a. Japanese Patent Document No. JP 51-100687 to Sakuma et al.
- b. Japanese Patent Document No. JP 53-5984 to Piitaa
- c. Japanese Patent Document No. JP 08-211342 A to Takano et al.
- d. Japanese Patent Document No. JP 55-11400 A to Donarudo et al.
- e. U.S. Patent No. 5,652,674 to Mizuuchi et al.
- f. U.S. Patent No. 5,838,486 to Sonoda et al.
- g. U.S. Patent No. 6,393,172 to Brinkman et al.
- h. U.S. Patent No. 6,839,376 to Goto

Communication Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leith A. Al-Nazer whose telephone number is 571-272-1938. The examiner can normally be reached on Monday-Friday, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner

A handwritten signature in black ink, appearing to read 'V. Woodhull', written in a cursive style.

LA